120 *120*

QC

HAAS 1

HAAS CNC vertical machine #1

QC2- Inspect parts off machine FAI/FAIB

Mill as per dwg and Folio FA937

Memo

DEBURR

Memo

0.00

0.00

0.00

13/01/03

13/01/03

OAS 08

Page 1

Quality Control

| | | | | | | | | | | DQA: | Date: | | |
|---|-------------|----------|-------------|-------------------------|--|------------------------|----------------------------|----------------|------------|-------------------------------|-----------------|--------------------|--|
| NCR: Yes | s / No | | | | WORK ORDER NON- | COI | VFORM | MANCE / UPDATI | | | | | |
| | | | | | | | | | | QA Closed: | Date: | | |
| Work Order: | | | | | DISPOSITION | | AGAINST DEPARTMENT/PROCESS | | | | | | |
| | | | | | Rework | ۱ ۱ | | Skid-tube Cro | osstube | | Water Jet | Engineering | |
| Part No. | | | 4 | Scrap | 1 | | | mall Fab | Pro | d. Eng. Coor. | Quality | | |
| | | , | | | Use-as-is | Therm | noforming F | inishing | Rec/Stor | e/Packaging | Other | | |
| NCR No. | | | | Work Order Update Large | | | Large Fab Cor | mposite | | Supplier | | | |
| | | T | 7 | · · | | | | | | -: o l | | | |
| Root | | <u> </u> | | | ption of work order update | 1 | nitial | Action | | Sign & | | | |
| Cause | Date | Step | Qty | (| or Non-conformance | Ch | ief Eng | Description | n | Date | Verification | QC Inspector | |
| Doc/Data | - . | | | | | | | | | | | | |
| Equip/Tooling | 4 | | | | | | | | | | | | |
| Operator | 4 | | | | | | | | | | | | |
| Material | 4 | İ | | | | | | | | | | | |
| Setup | 4 | | | . | | | | | | | | | |
| Other | 4 | | | | | | | | | | | | |
| Process | 4 | | | | | | | | | | 3 | | |
| Supplier - | 4 | | | | | | | | | | | | |
| Training | 4 | | · · · | | | | | • | | | | | |
| Unapproved | | 1 | <u>`~·</u> | | | | T 64 TE | 2007 | | | | | |
| 1 | <u> </u> | <u></u> | | | The state of the s | AUL | T CATE | JURY . | | | | | |
| Landing | _ | | | | General | <u>/</u> - | Grain | | | 0 | <u> </u> |]/5 | |
| Bending Bend | | | | | | Hardwa | | | Ovalized | A-1 | Pressure/Forced | | |
| Centre Not Concentric to O/S BOM/Route Cracks Broken/Damage | | | | | - ∤ | 4- | 1 | | ļ | Over/Under | | Temperature/Cure | |
| <u> </u> | _ | Crimoned | | - | Broken/Damaged | - | 1 | on Incomplete | | Part Incorred Part Lost/Mi | - | Weld | |
| · | Crushed/ | crimpea. | | <u> </u> | Burrs | \vdash | | | | | ssing | Wrong Stock Pulled | |
| Cuffs C | | | | Contamination | <u></u> | Maintenance Mislaheled | | | Part Moved | | | | |

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Power Loss/Surge

Other

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Inspection Strip in Tube

Torque Waves in Extrusion

Cut Too Short

Drill Holes

Drawing 1

Finish

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

December-19-12 12:52:47 PM

| Revision ID: | D4103-1 Step / Handle | en e | | Accept | *N900040 | 100 |)* S | etup Start Stop | *NS | 31* 32* |
|--|--------------------------|---|--------------------|---|----------------------------|--------------|---------------|-----------------|------------------|----------------|
| Start Date: Required Date: Reference: | 12/14/12 1/11/13 | Start Qty: 8.00 Req'd Qty: 8.00 | *8* *8* | | Cust Item ID: Customer: | | | | | |
| Approvals: | | n: | | Tooling: SPC (Y/N): | Date: | | R | Start Stop | *NF | ₹1* ₹2* |
| Sequence ID/ Work Center II 130 *130* QC Quality Control |) | Operation Description QC8- Inspect parts - seco | ond check | Set Up/ Run Hours 0.00 DAS 14 0.00 289 | Tool ID Tool# | Plan Code | Accept Qty | | Reject Number | Insp. Stamp |
| *140 *140* HandFinish Hand Finishing | | Chemical Conversion Co | oat per QSI005 4.1 | 0.00 | | | 8 | 16 | <u>/3·/</u> | -8 |
| 150 *150* QC Quality Control | | QC3- Inspect Part Finish Memo | 1 | 0.00 DAS 0.00 B-1-8 | | | 8 | | | |

| NCR: | NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE | | | | | | | | | | | | |
|---|--|----------|-----------|-----------|---|--|--|----------|-------------|---|---------------------------|--|--------------|
| | | | | | | | | | - | | QA Closed: | Date: | |
| Work Orde | er: | | | | | DISPOSITION | | | | AGAINST DE | PARTMENT | /PROCESS | |
| Part No | | | | | | Rework Skid-tube Crosstube Scrap Machining Small Fab Thermoforming Finishing Work Order Update Large Fab Composite | | | 4 | Water Jet d. Eng. Coor. re/Packaging Supplier | Engineering Quality Other | | |
| Root | | | | | Descri | ption of work order update | Ti | Initial | Act | ion | Sign & | | |
| Cause | | Date | Step | Qty | (| or Non-conformance | Ch | nief Eng | Descr | ription | Date | Verification | QC Inspector |
| Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved | | | | | | | | Ċ | | | | | |
| | | | | | | | AUL | T CATE | GORY | | | | |
| Landi | | | | | _ | General | _ | 1 | | | ٦ | _ | 7 |
| | Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend | | | | Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes | | Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread Offset | | Jnclear | Ovalized Over/Under Part Incorred Part Lost/M Part Moved Positioned V Power Loss/ | ct issing Vrong | Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other | |
| | | Torque W | aves in E | extrusion | ı [| Drawing | | Out of (| Calibration | | | | |
| | Turning Sequence | | | | Finish | | Out of Sequence | | | | | | |

Outside Dimensions

DQA:

Date:

Wave/Twist in Tube

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

0.00

Memo

OC

Quality Control

mr 13-01-09

| | | | | | | | | | | | DQA: | Date: | | | |
|---|--|----------------------|-----------|----------|---------|---------------|------------------------|--------------------|---------------------------------------|----------------------------------|------------------------|--------------------|--------------------------|--|--|
| NCR: | Yes | / No | | | | | WORK ORDER NON-C | 10: | NFORI | MANCE / UPDATE | | | | | |
| | | | | | | | | | | | QA Closed: | Date: | | | |
| Vork Ord | er: | | | | | | DISPOSITION | | AGAINST DEPARTMENT/PROCESS | | | | | | |
| | | | | | | | Rework | | | Skid-tube Crosstube Water Jet En | | | | | |
| Part | No. | | | | | į | Scrap | | | Quality | | | | | |
| | | | | | | | Use-as-is | | Thern | noforming Finishing | Rec/Stor | e/Packaging | Other | | |
| NCR | No. | | | | | | Work Order Update | | | Large Fab Composite |] | Supplier | | | |
| Root Description of work order update Initial Action Sign & | | | | | | | | | | | | | | | |
| Root Cause | | Date | Step | Qty | Desc | | or Non-conformance | 1 | nitial iief Eng | Action Description | Sign & Date | Verification | OCInchastar | | |
| oc/Data | П | Date | Sieh | Qty | | _ | i Non-comormance | CII | nei chg | Description | Date | vernication | QC Inspector | | |
| uip/Tooling | | | | | | | | | | | | | | | |
| perator | 一 | | | | | | | | | | | | | | |
| aterial | | · | | | | | | | | | | | | | |
| tup | | | | | | | | | | | | | | | |
| ther | | | | | | | | | | | | | | | |
| ocess | L | | | | | | | | | | | | | | |
| ipplier | _ | | | | | | | | | | | | | | |
| aining | _ | | | | | | | | | | | | | | |
| napproved | | | <u> </u> | | | | | | | | <u> </u> | | | | |
| | | | | | | | | AUL | T CATE | GORY | | | | | |
| Land | _ | 1 | | | Г | | General Bend | | Grain | <u> </u> | ٦, ,, | | 7 | | |
| | \vdash | Bending Centre No | at Concor | atric to | 0/6 | | BOM/Route | _ | Grain Hardwa | | Ovalized Over/Under | ** | Pressure/Forced | | |
| | \vdash | Cracks | or concer | itile to | U/3 | | Broken/Damaged | | • | ion Incomplete | Part Incorred | <u> </u> | Temperature/Cure Weld | | |
| | | | | | | Burrs | - | 1 | tions Incomplete/Unclear | Part Lost/Mi | | Wrong Stock Pulled | | | |
| | | | | | | Contamination | | Mainte | · · · · · · · · · · · · · · · · · · · | Part Moved | 33111B | | | | |
| | Heat Treat Countersink | | | | Mislabe | | Positioned V | Vrong | | | | | | | |
| | Inspection Strip in Tube Cut Too Short | | | | | Misread | | Power Loss/ | | Other | | | | | |
| | Ripples in Bend Drill Holes | | | | | Offset | <u></u> | · | <u> </u> | | | | | | |
| | Torque Waves in Extrusion Drawing | | | | | | Drawing | Out of Calibration | | | | | | | |
| | Turning Sequence Finish | | | | | | Finish | | Out of Sequence | | | | | | |

Outside Dimensions

Wave/Twist in Tube

Folio

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Picklist Print

December-19-12 12:52:47 PM

Work Order ID:

94573

Parent Item:

D4103-1

Parent Item Name:

Step / Handle

Start Date: 12/14/12

Required Date: 1/11/13

Page 1

Start Qty: 8.00

Required Qty: 8.00

Comments

IPP REV: A NEW ISSUE 10-07-01 JLM VERIFIED BY:DE

| Component Item ID/ Item Name | Replacement Item ID | Mfg/ Purch | Bin Item | Primary Location | Last Location | Route Seq ID | Unit of Measure | Qty on Hand | Qty per Kit | Total Qty | Qty Issued | Date Issued | Status |
|---|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|--------------|---------------|----------------|--------|
| M6061T6B2.000X03.500 6061-T6 Bar 2.00 x 3.50 | | Purchased | No | — | | 100 | f | 17.4922 | 0.52 | 4.3789472 | J.A | 13 | 01/03 |
| | | | | Location | | Loc Qty | <u>Lo</u> | c Code | | | | i | 1 |
| | | | | MAT009 | | 17.4922 | | | | | | | |
| | | | | 1127 | 764 | 1.4568 | | | | c+ | | | |
| | | | | → 1181 | 82 | 13.9054 | | | 4. | 3789 T | | | |
| | | | | 1216 | 660 | 2.13 | | | | | | | |

| NCR: | Yes | / No | |
|------|-----|------|--|

WORK ORDER NON-CONFORMANCE / UPDATE

| DQA: | _Date: | · · · · · · · · · · · · · · · · · · · |
|------|--------|---------------------------------------|
| | | |

| | | | | | | | | | | | QA Closed: | Date: | |
|---------------|--|---------------------|-----------|---------------|----------------|-----------------------------|---------------------------|---------|-----------------|------------|----------------------------|----------------|--------------------|
| Work Orde | er: | | | | | DISPOSITION | | | | AGAINST DE | PARTMENT | /PROCESS | |
| Part I | Rework Skid-tube Crosstube Water Jet Er Part No. Scrap Machining Small Fab Prod. Eng. Coor. Use-as-is Use-as-is Large Fab Composite Supplier | | | | | | Engineering Quality Other | | | | | | |
| Root | Root Desc | | | | | ption of work order update | Ti | nitial | Ac | ction | Sign & | | |
| Cause | | Date | Step | Qty | | or Non-conformance | Ch | ief Eng | Desc | cription | Date | Verification | QC Inspector |
| Doc/Data | | | | | | 30 300 | | | | | | | |
| Equip/Tooling | | | | | | | | | | | | | |
| Operator | Ш | | | | | | | | · | • | | | |
| Material | Щ | | | | | | | | | | | | |
| Setup | | | | | | | | | | | | | |
| Other | Ш | | | | | | | | | | | | |
| Process | | | | | | | | | | | | · | |
| Supplier | Ш | | | | | | | | 1 | , |] | | |
| Training | | | | | | • | | | | | | | |
| Unapproved | | | <u> </u> | <u> </u> | | | <u> </u> | | | | | | |
| ļ | | | | | | | AUL | T CATE | GORY | | | | |
| Landi | | 3 | | | | General | _ | ۱ | | | 1 | _ | ٦ |
| | - | Bending | | | o /c | Bend | - | Grain | | | Ovalized | | Pressure/Forced |
| | - | Centre No Cracks | ot Concer | itric to | ^{5/5} | BOM/Route Broken/Damaged | - | Hardwa | | <u> </u> | Over/Under | <u> </u> | Temperature/Cure |
| | \vdash | Crushed/ | Crimpad | | | Burrs | \vdash | i ' | ion Incomplete | /! !maloon | Part Incorred | - | Weld |
| | | Cuffs | cimpea. | | - | Contamination | | Mainte | ions Incomplete | Onclear | Part Lost/Mi | issing | Wrong Stock Pulled |
| | \vdash | i | ıt | | | Countersink | - | Mislabe | | | Part Moved Positioned V | Mrong | |
| | Heat Treat | | | Cut Too Short | <u> </u> | Misrea | | | Power Loss/ | | Other | | |
| | | · · | • | IUDE | <u> </u> | Drill Holes | - | Offset | 4 | <u> </u> | Ti owei rossi | Juige | Other |
| | | | Drawing | \vdash | ł | Calibration | | | | | | | |
| | H | 1 | | | | Finish | _ | 1 | Sequence | | | | |
| | | | | Folio | \vdash | 1 | Dimensions | | - | , | | | |

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

| DART AEROSPACE LTD | Work Order: | 94573 |
|------------------------------|--------------|-------------|
| Description: Step/Handle | Part Number: | D4103-1 |
| Inspection Dwg: D4103 Rev: A | | Page 1 of 1 |

FIRST ARTICLE INSPECTION CHECKLIST

| Drawing | Tolorono | Actual | Accept | Reject | Method of | Comments |
|------------|--------------------|------------|----------|--------|------------|----------|
| Dimension | Tolerance | Dimension | Ассері | Reject | Inspection | Comments |
| 2.93 | +/-0.030 | 2.930 | y | | Ven | 6A-01 |
| 0.37 | +/-0.030 | 0.370 | | | 11 | 11 |
| 0.83 | +/-0.030 | 0.829 |) | | et . | 11 |
| Ø0.560 | +/-0.010 | 00.560 | > | | 11 | 1 |
| 0.06 X 45° | +/-0.030 X +/-0.5° | 0.065 x45° | 1) | | 11 | 11 |
| 0.26 | +/-0.030 | 0.250 |) | | 11 | |
| 0.33 | +/-0.030 | 0.326 | \ | | H-6 | 31006 |
| R0.06 | +/-0.030 | R0.063 | > | | R-6 | ref. |
| 1.78 | +/-0.030 | 1.783 | > | | Veca | BA-01 |
| 0.45 | +/-0.030 | 0,436 | \ | | 41 | <u>u</u> |
| 0.33 | +/-0.030 | 0.336 | \ | | H-6 | 31006 |
| 0.75 | +0.000/-0.030 | 0.750 | / | | D-6 | GA-08 |
| 1.66 | +/-0.030 | 1.644 | / | | Vern | 6A-01 |
| 0.80 | +/-0.030 | 0.784 | \ | | 0 | 11 |
| 1.07 | +/-0.030 | 1.076 |) | | H-6 | 31006 |
| 3.85 | +/-0.030 | 3.849 | | | Verg | 6A-01 |
| 0.03 X 45° | +/-0.030 X +/-0.5° | 0.035 X45° | | | fi ' | <u> </u> |
| 0.31 | +/-0.030 | 0.303 | | | 11 | 11 |
| 0.28 | +/-0.030 | 0.277 | | | t (| 1) |
| 0.030 Deep | +/-0.030 | 0.031 | | | D-6 | 6A-08 |
| 6.00 | +/-0.030 | 6.000 | | | Vern | (A-0) |
| R0.27 | +/-0.030 | RO.270 | € | | R-6 | ref. |
| 0.56 | +/-0.030 | 0.554 | ~ | | Vern | 6A-01 |
| 1.74 | +/-0.030 | 1.753 | ✓ | | 14-6 | 31006 |
| 2.50 | +/-0.030 | 2.500 | V | | Vera | 6A-01 |
| Ø0.438 | +0.006/-0.001 | фo.441 | / | | - B | 11 |
| Ø0.266 | +0.006/-0.001 | 00267 | / | | 11 | |
| 0.96 | +/-0.030 | 0.952 | ~ | | 4-6 | 31006 |
| 0.26 | +/-0.030 | 0.251 | ~ | | 11 | <u>n</u> |
| 0.25 | +/-0.030 | 0.245 | ~ | | Vern | 6A-01 |
| 2.25 | +/-0.030 | 2.250 | S | | 4(| 11 |
| 1.00 | +/-0.030 | 1.000 | | | l (| |
| 0.20 | +/-0.030 | 0.203 | → | | 11 | - 41 |
| 0.98 | +/-0.030 | 0.975 | V | | - 11 | 11 |
| 0.32 | +/-0.030 | 0.315 | J | | Ü | (I |
| 1.25 | +/-0.030 | 1.247 | | | 11 | 1/ |
| R0.19 | +/-0.030 | RO. 188 | J | Δο | R-6 | ref. |

| 110.10 | 2AC | 1 10 10 | 240 | | |
|--------------|----------|-------------|---------|-----------------------|--|
| Measured by: | J.A (08 | Audited by: | 14 | Preliminary Approval: | |
| Date: | 13/01/03 | Date: / | 3/0/106 | Date: | |
| L | | | | | |

| Rev | Date | Change | Revised by | | Approved |
|-----|----------|-----------|------------|---|----------|
| A | 10.10.07 | New Issue | KJ ON | Δ | <u></u> |
| | | | , , |) | • |

B7-2 E -



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NOTES:
1) MATERIAL: 6061-T6/T651/T6510/T6511/T62 ALUMINUM BAR
PER QQ-A-225/8 OR AMS-QQ-A-225/8 (OR AMS 4117/4128/4115/4116)
OR QQ-A-200/8 OR AMS-QQ-A-200/8 (OR AMS 4160)
OR ASTM B211 OR ASTM B221
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
4) UNITS: INCHES UNLESS OTHERWISE NOTED
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
6) IDENTIFICATION: IDENTIFY WITH DART P/N "D4103-1" USING FINE POINT PERMANENT INK MARKER
7) WEIGHT: 0.81 IbS.

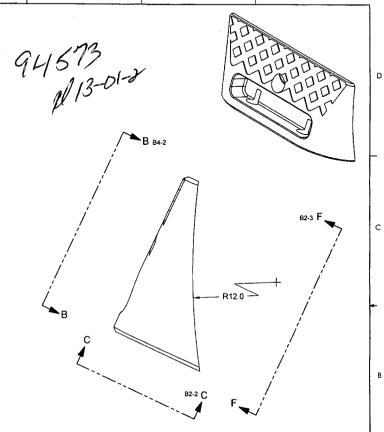
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С

7) WEIGHT: 0.81 bs 8) MACHINE 0.28 x 0.31 GRIP 0.030 DEEP AT 45° PATTERN 0.25 APART



| | 1,,,,,,, | | | | 1 |
|---------------|----------|------|---|----|--------------|
| A | NEWIS | SSUE | | | 10.05.17 |
| REV. | <u> </u> | | DESCRIPTION | BY | DATE |
| DESIGN RF | | RF | DART AEROSPACE LTD | | |
| DRAWN | | RF, | HAWKESBURY, ONTARIO, CANADA | | |
| CHECKED | | ## | DRAWING NO. | | REV. A |
| MFG. APPR. | | 24 | D4103 | | SHEET 1 OF 3 |
| APPROVED | | 4 | STEP/HANDLE | | SCALE |
| DE APPR. | | # | | | NTS |
| DATE 10.05.17 | | | THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED OF THE STREETS CONTROL THAT IT IS NOT TO BE USED FOR ANY APPOSED ON OFFICION COMMUNICATED TO ANY OTHER PRESON WITHOUT | | |

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8 94513 D D 0.06 x45° CAMFER-0.26 87-3 D Ø0.560 2 PL 1.66 REF 0.33 0.25 TYP 6.00 0.28 Ø0.438 0.80 DEEP, 2PL R0.27 TYP 2.93 REF С 0.31 R0.06 0.83 1.78 0.80 0.37 -0.03 x 45° CHAMFER 0.45 0.83 REF 0.75^{+0.00} **-**D 0.33 -0.06 x45° CAMFER VIEW B-B D3-1 SCALE 0.5X VIEW C-C SCALE 0.5X SECTION A-A D6-1 DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DESIGN DRAWN CHECKED DRAWING NO. REV. A D4103 MFG. APPR. SHEET 2 OF 3 TITLE APPROVED SCALE STEP/HANDLE

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R0.19 TYP R0.06 TYP 1.25 REF 0.18 С 0.25 TYP 1.78 REF 0 0.98 REF Ø0.560 REF Ø0.266 2 PL VIEW D-D C8-2 SCALE 0.5X VIEW E-E 07-1 VIEW F-F C1-1 DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DESIGN R. W. DRAWN DRAWING NO. CHECKED REV. A D4103 MFG. APPR. SHEET 3 OF 3 TITLE APPROVED SCALE DE APPR. NTS

3

STEP/HANDLE

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